

EXHIBIT 2

Defendant's Expert Witness Disclosure

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*Attorneys for Defendants
 Stephen Fairfax and MTechnology*

**UNITED STATES DISTRICT COURT
 DISTRICT OF NEVADA**

SWITCH, LTD.,
 a Nevada limited liability company,

Plaintiff,

vs.

STEPHEN FAIRFAX; MTECHNOLOGY;
 DOES 1 through 10; and ROE ENTITIES 11
 through 20, inclusive,

Defendants.

Case No.: 2:17-cv-02651-GMN-EJY

**DEFENDANT'S INITIAL DISCLOSURE OF
 EXPERT WITNESS**

Pursuant to Federal Rule of Civil Procedure 26(a) and (e), Defendants Stephen Fairfax and MTechnology, by and through their counsel of record, make their initial disclosure of expert witnesses whose testimony they expect to rely upon at trial.

Julian Rachman, PE
 1616 Corporate Ct. Suite 100
 Irving, Texas 75038
 972-827-2605

Mr. Rachman will testify as to his expert opinion regarding: (1) the design, development, and construction of data centers; (2) the design, development,

1 and construction of Plaintiff Switch, Ltd.'s ("Switch") data center(s); (3) the design,
2 development, and construction of Aligned Data Centers' ("Aligned") data
3 center(s); (4) the alleged similarities between data centers designed by Plaintiff
4 Switch and data centers designed by Aligned; (5) the alleged uniqueness of data
5 centers designed by Switch, compared with data centers designed by Aligned
6 and others in the industry; and (6) Defendant Stephen Fairfax's qualifications and
7 ability to design data centers.

8 Attached to this disclosure are the curriculum vitae of Julian Rachman and
9 Mr. Rachman's expert report. Julian Rachman is charging \$350 per hour for his
10 services, with the exception of at trial where he charges \$3,500 per day.
11 Defendant reserves the right to supplement and amend this disclosure.

12 Executed on: 10th day of October 2019.

13 /s/ Ronald D. Green

14 Marc J. Randazza (NV Bar No. 12265)

15 Ronald D. Green (NV Bar No. 7360)

16 Alex J. Shepard (NV Bar No. 13582)

17 **RANDAZZA LEGAL GROUP, PLLC**

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19 Las Vegas, NV 89117

20 *Attorneys for Defendants*

21 *Stephen Fairfax and MTechnology*

Case No. 2:17-cv-02651-GMN-EJY

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on October 10, 2019, I served the foregoing document upon counsel for the Plaintiff Switch, Ltd., listed below, via electronic mail and U.S. Mail:

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Attorneys for Plaintiff
Switch, Ltd.

Respectfully Submitted,

/s/ Crystal Sabala
Employee,
Randazza Legal Group, PLLC

EXPERT REPORT

Switch, Ltd.

vs.

Stephen Fairfax, MTechnology

Prepared By:
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EXPERT REPORT
Switch, Ltd.
vs.
Stephen Fairfax, MTechnology

[District Court, Clark County, NV Case No. A-17-761382-C]

Prepared By:

Julian Y. Rachman, PE
Nevada PE No. 1167



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October 10, 2019



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I. Summary

Julian Rachman, PE has been retained by Randazza Legal Group, to provide this expert report of his findings on the above-referenced complaint filed in federal court in Nevada on September 12th, 2017 for the “theft of Trade Secrets”. (Reference Mr. Rachman’s CV in attachment 1 for a summary of his knowledge and professional experience of over 40 years in the data center industry.)

An initial complaint was filed with the Eastern District of US Federal Court in Marshall, Texas, on August 7th, 2017 for Patent Infringement and subsequently dropped.

From my participation with the 7 x 24 Exchange data center trade organization, my knowledge of Mr. Stephen Fairfax’s reputation and experience is **only** as an distinguished Forensic and Reliability Assessment consultant. Not only is Mr. Fairfax not a registered professional engineer but to my knowledge he has never designed any air-conditioning nor electrical systems for data centers. By law, as the plans and specifications for each data center design must be signed and sealed by a registered professional engineer (PE), **only** a PE can design data centers.

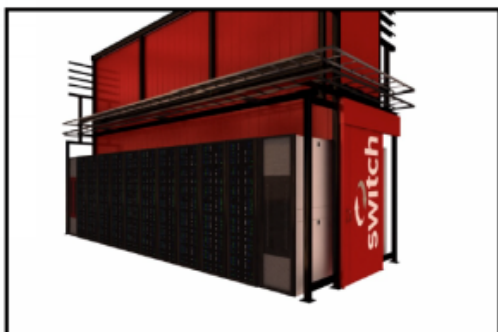
Salient information for my responses was collected from both above-referenced documents, with responses exclusively devoted to the September 12th Complaint and to several of the patents filed by the plaintiff.

The opinions expressed in this document are as a Registered Professional Engineer with over 40 years of experience in the consulting and design of data centers.

II. Findings

Finding 1 (with direct reference to verbiage and photographs contained in the 9/12/2017 Complaint):
Switch T-SCIF® “Heat Shield” vs. Aligned Customer Pod “Hot Aisle Containment”:

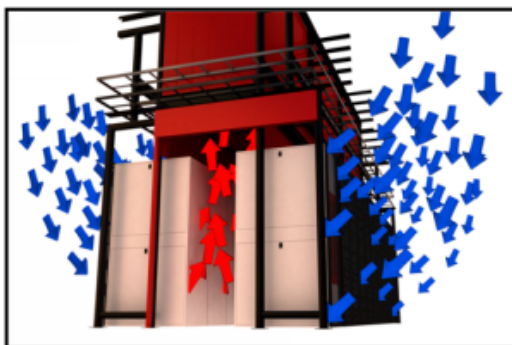
Switch’s T-SCIF
Side View



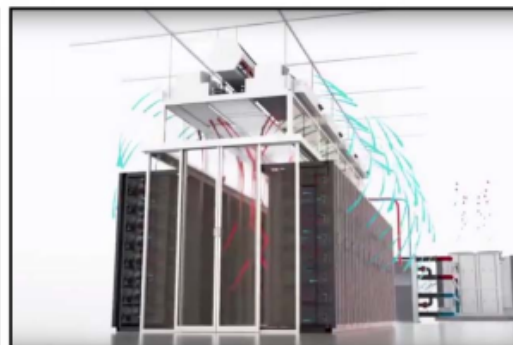
Aligned’s “Customer Pod”
Side View



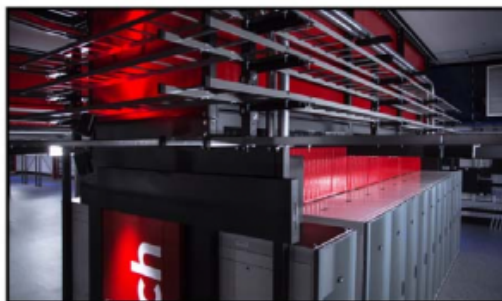
Switch’s T-SCIF
Front View



Aligned’s “Customer Pod”
Front View



Switch’s T-SCIF
Top View Showing the Heat Shield



Aligned’s “Customer Pod”
Top View Showing the Heat Shield



With reference to above six side-by-side photographs that were presented in the Complaint illustrating Aligned's infringement of Switch's design. Both design concepts are typical and standard designs for the high-density data center air-conditioning systems. This design to remove the heat from the back of the servers that are housed in vertical racks is commonly referred to in the industry as "hot aisle" containment or by Switch as a "heat shield". This widely used concept has been deployed for well over 20 years in most data centers in the US. It was initially used in raised floor environments to prevent the "hot" return air from and mixing with the cold supply air, and thereby diluting cooling systems' effectiveness (efficiency).

It is readily apparent from the above top two photographs that each design provides cooling to the server racks in a **significantly** different manner. The Switch design uses air-conditioning ducts or plenums to supply and remove the cold and hot air respectively. Whereas the Aligned design does **not** use any ducts but deploys overhead cabinet coolers, mounted above the racks, to remove the hot air and in turn cool it and return it back to the front of the server racks.

In addition, Aligned's design utilizes an additional "cold aisle" containment concept. The reason for their design is to preclude any cold air from migrating away from or mixing with warmer room air before entering the intake of the servers. It is perceptible from the first photograph that the Switch design does not utilize the "cold aisle" containment concept.

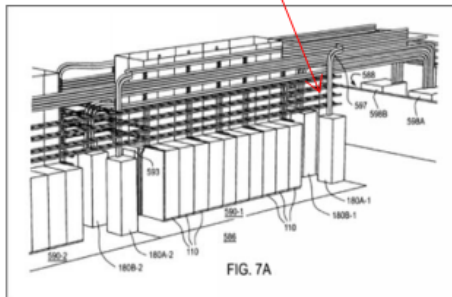
The second two side-by-side photographs depict the hot and cold air flow patterns of the two systems. The two cold air flow patterns are significantly different - Switch's coming from above from sheet metal ducts and Aligned's emanating from multiple localized cabinet coolers.

The third two side-by-side photographs depict the "hot aisle" containment design, or Switch's lately created name of "heat shield". The "hot aisle" containment design of Switch uses a tall plenum to direct the flow up to the false ceiling and then back to the air-conditioning system. Aligned's design utilizes a much smaller containment system to only contain the hot air in and around the cabinet coolers.

In conclusion, the only common design concept/component used by the two systems is the commonly deployed industry standard of "hot aisle" containment. It should be noted that the term "heat shield" is not commonly used in air-conditioning systems. However, it is a commonly used thermal engineering term as a protection from very hot components from heating up and damaging other components or materials in proximity. A common example of a heat shield is the metal barrier between an exhaust muffler and the body of an automobile. The heat shield serves both as a barrier and a dissipator of the heat from the muffler to prevent the car's underbody from getting burned and in turn damaged.

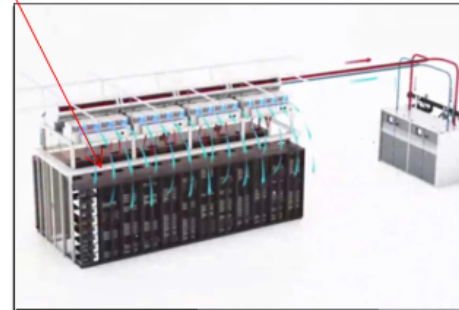
Finding 2: (with direct reference to verbiage and photographs contained in the 9/12/2017 Complaint)
Overhead Racking System:

Multiple overhead ladder trays located on the side of the hot aisle return plenum



SWITCH T-SCIF - DIAGRAM

No ladder trays indicated



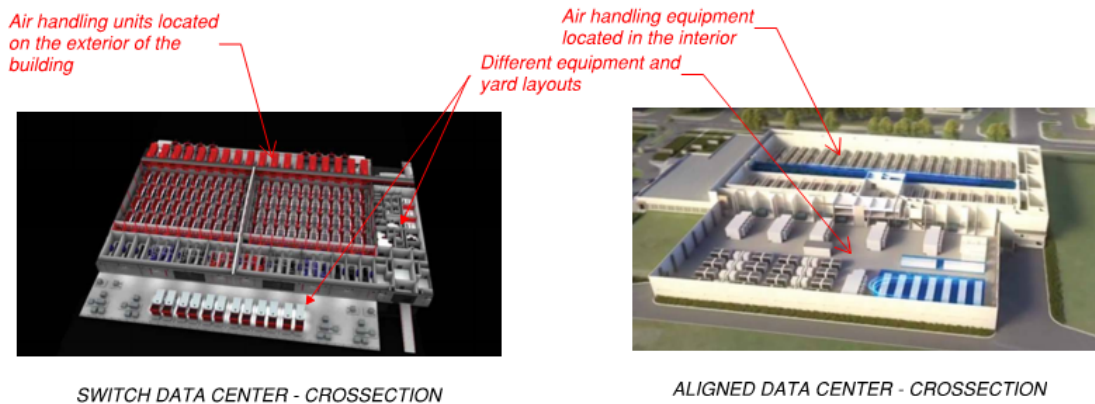
ALIGNED CUSTOMER POD - DIAGRAM

One of the most significant recent changes to data center design is to eliminate the raised floor system which results in significantly reduced cost. The raised floor system was primarily used as an air-conditioning supply air delivery system and as a power and data cabling pathway. Without the underfloor power and data cabling pathway, all cables, conduits, wiring, etc. must now be routed overhead. The industry standard methodology for accomplishing this is by deploying rigid conduits and/or cable and ladder trays.

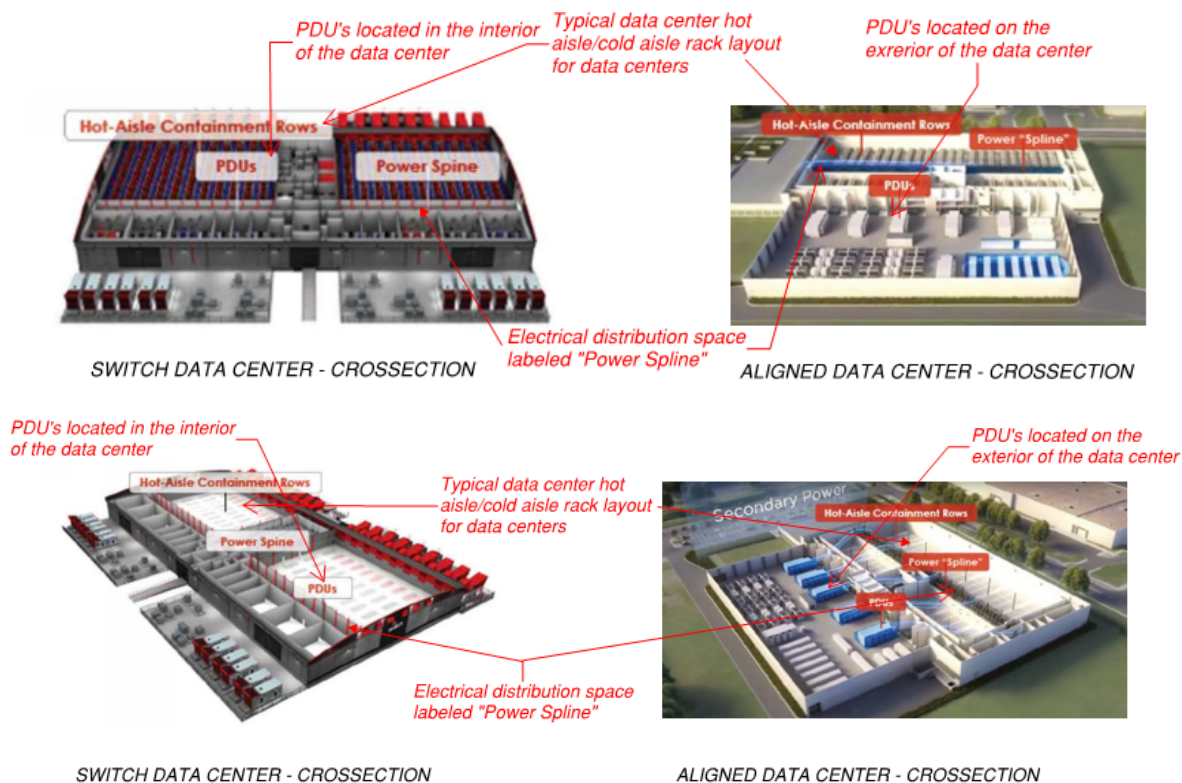
From the above two side-by-side inserts, both designs utilize many of these standard components but in different ways and configurations. In the Switch design, due to the tall “hot air” containment plenum, all the cables, and associated racking systems are located on **either side** of the plenum and racks. In contrast, due to the compact “hot air” containment plenum in the Aligned design, the power and data cable may be run above or beside the low-profile plenum. It should be noted that the photograph (shown above) in the Complaint representing Aligned’s design does **not** depict any racking system per se.

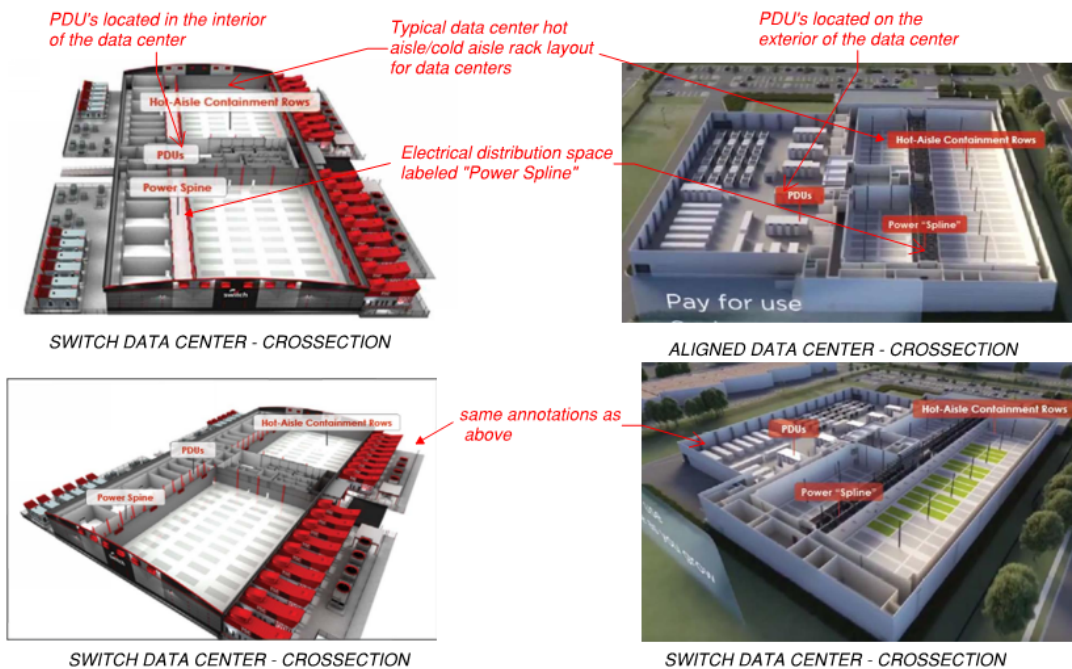
In conclusion, both designs employ commonly used materials and components but in a different manner thus making the designs significantly **different** from each other.

Finding 3: (with direct reference to verbiage and photographs contained in the 9/12/2017 Complaint)
Entire Facility:



The above two side-by-side photographs depict the cross-sections of each data center. Each facility utilizes different major components resulting in two distinctly different layouts. The internal rack row layout is similar; however, this is typical for all data centers based on a hot aisle/cold aisle design.





The above eight side-by-side photographs further depict cross-sections of each data center design. The first annotation “PDU’s” on each of the photographs are in different places in each design. In the Aligned design, they are exterior to the building with the Switch’s being internal. The Switch layout is typical for most data centers.

The second annotation “Power Spine” on each of the eight photographs is where most of the power feeders and electrical distribution equipment are located. This designated electrical space, more commonly referred to as the switchgear or electrical room(s) or equipment galleries, affords the facility with the added security of excluding maintenance and repair personnel from within in the highly secure data center space.

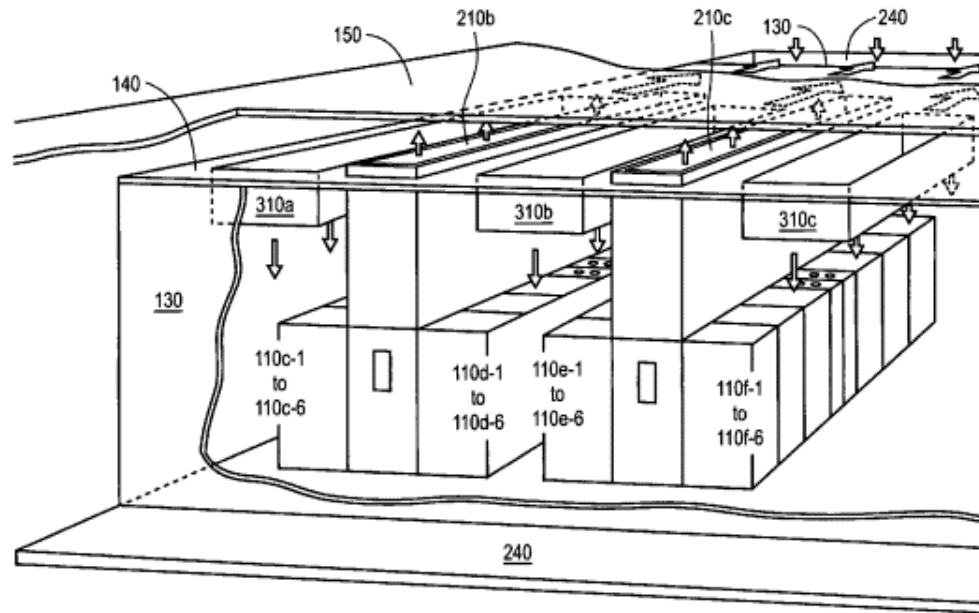
The third annotation “Hot Aisle Containment Rows” is the most common method for laying out server racks. The data center floor, commonly referred to as the “white space”, has the server racks laid out in rows perpendicular to the length of the building. This configuration can be laid out in several ways, namely in “plain” rows without containment, “hot aisle containment rows”, “cold aisle containment rows”, or in the Aligned’s design as both “hot and cold aisle containment rows”. Also, there is no reason why the rows cannot be laid out in parallel to the length of the building. Factors such as efficiency, access, number of pods, number of racks per pod, etc. are all factors weighing into the layout of the data center “white space”.

Both designs are different and use universal design concepts and layouts. **None** of the terms, layouts, and concepts are unique to either design and are common characteristics of most data centers in the US.

Finding 4: Patent '780:

This patent was filed on December 6, 2011 as an invention for:

INTEGRATED WIRING SYSTEM AND THERMAL SHIELD SUPPORT APPARATUS FOR A DATA CENTER.

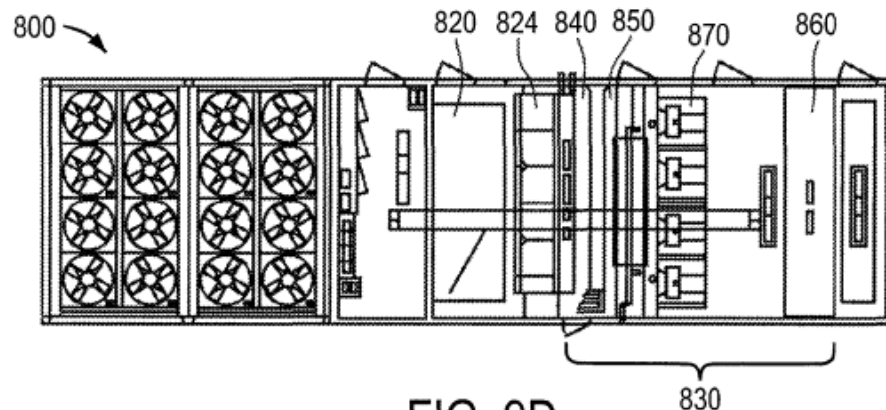
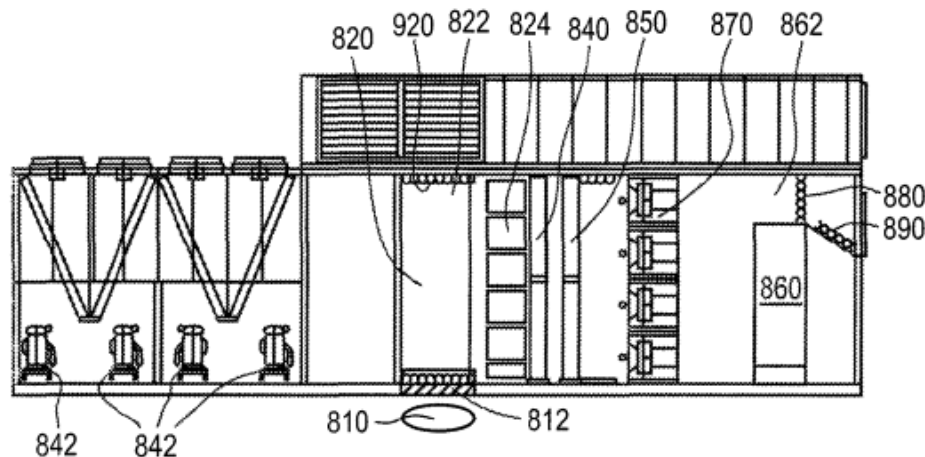


The above drawing from patent '780 is the most commonly used methodology for cooling data centers that do not have a raised floor plenum. Note that this design uses overhead supply air ducts that provide cold air into the “cold aisle” and utilize a plenum to contain the returning hot air directly to a false ceiling and then back to the air-conditioning unit(s).

The other citations in the patent, namely cable racking, conduit system layout, control systems are all basic methodologies for designing, implementing and controlling data centers. If required, each patent citation, component, control methodology, etc. can be addressed on an item-by-item basis in a supplementary report to demonstrate its pervasiveness in mainstream data center designs. **None** of the items or components cited in this patent are unique or unusual, including the way they are aggregated into a system.

Finding 5: Patent '495:

This patent was filed as on May 15, 2012 as an invention for:
 AIR HANDLING CONTROL SYSTEM FOR A DATA CENTER.

**FIG. 9D****FIG. 9E**

The above drawings from patent '495 indicates the type of air-conditioning units deployed in Switch's design. Firstly, from the photographs in Finding 3, the Aligned data center does **NOT** utilize these types of units nor the same type of system for cooling their customers' server racks. Secondly, the unit displayed in the Figs. 9D and 9E are industry-standard data center air-conditioning units.

This patent further cites the "uniqueness" of the control system for this type of air-conditioning system. The described control system describes **only** the deployment of temperature, humidity, and pressure sensors for controlling various dampers, variable speed drives for fans, etc. from a central computer system. This is a standard way these and most complex air-conditioning systems are

controlled. Typically, the **only** unique component of these systems are the control algorithms, **none** of which are cited or alluded to in this patent.

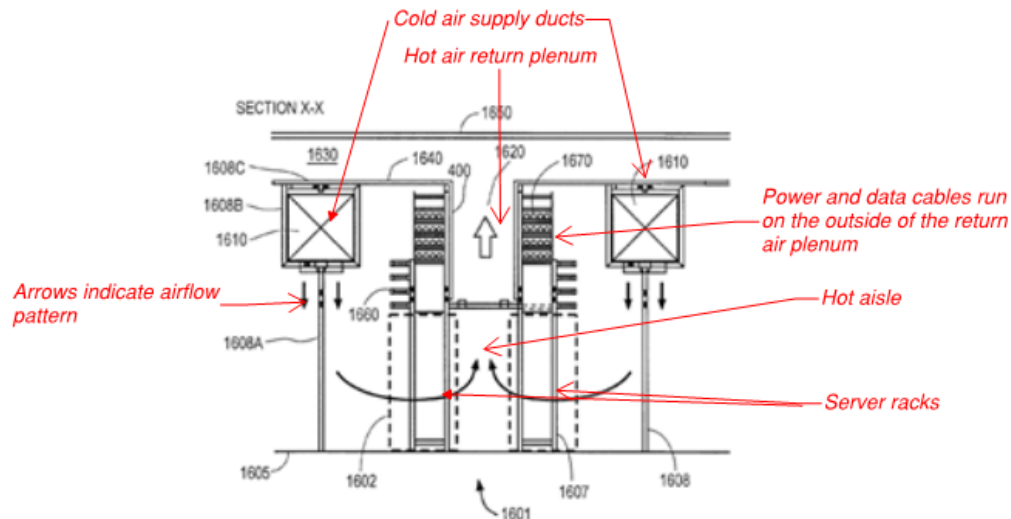
In order to effectively define and patent a proprietary control system, the following two **fundamental** criteria must be included:

- a. P&ID (Piping and Instrumentation) diagram
- b. Detailed Sequence of operation.

Neither of these two criteria are included nor defined, which renders the patent unjustly broad. The outcome of this broadness is that any design professional would be precluded from designing a control system even one that does not use the same air-conditioning system or equipment. This would include most of the complex air-conditioning systems for data centers, hospitals, laboratories, “clean” rooms, etc. that have been and are being designed in the US today.

Finding 6: Patent '389:

This patent was filed as on April 11, 2017 as an invention for:
 ELECTRONIC EQUIPMENT DATA CENTER AND SERVER CO-LOCATION FACILITY CONFIGURATIONS
 AND METHOD OF USING THE SAME.

**FIG. 1B**

SWITCH'S CROSS SECTION OF THEIR DATA CENTER DESIGN PATENT

The above drawing from patent '389 indicates the air flow pattern, rack locations, "hot aisle" containment and cold air provided by supply air ductwork. In addition, the patent describes a specific structural frame to support the supply duct, "hot aisle" return air plenum and cable racking system.

The above configuration is a commonly used method in the data center industry for cooling, laying out server racks, and locating cables and conduits that provide data and power to the server racks. In fact, these strategies and variations thereof are now and were well-known; and have been deployed for more than 15 years.

Below is a typical example of a readily available design from a recognized manufacturer, indicating both “hot aisle” containment and cable racking, like Switch’s layout.



III. Conclusions

- A. In Findings 1, 2 and 3, the alleged design similarities are vague and lack any specific engineering detail. In addition, none of Aligned’s engineering design elements match those of Switch’s. This fact categorically negates Switch’s claim of Aligned having copied the design. Both Aligned and Switch employ radically different air-conditioning and electrical systems that do not even remotely encroach on the other’s designs. Switch’s design uses air handling units located external to the building whereas Aligned’s design is refrigerant-based that delivers refrigerant to overhead cabinet coolers located directly over the server racks. Aligned’s electrical system is medium voltage (15,000 volt class equipment) with medium voltage UPS systems with a radically different electrical architecture.
- B. The design of both facilities utilizes industry-standard and readily available components. The aggregation of these components into systems also represent archetypal system designs. The racking of cables and conduits above server racks is and has been used for many years and was first deployed by telephone companies decades ago.
- C. From Findings 4, 5, and 6, **none** of the patents represent any novel, unique or unknown design techniques in the formulation of data centers. All the design claims/complaints have been previously and are presently utilized, in part or in total, by most data center design professionals. Numerous previous publications, conference transactions, and vendor sales material substantiate this fact.
- D. The claims in the Complaint are superficial and trivial; and do **not** substantiate any engineering similarities between both designs.
- E. All three patents give a “false” general impression that Rob Roy, the inventor, conceived of the original design of a data center. All the stated design, components and concepts are prevalent and commonplace in the data center industry. The trade organization, 7x24 Exchange, has had numerous presentations and discussions on these types of designs, most of which were given many years before any of his patents were filed.

- G. The T-SCIF concept is **not** a unique concept and therefore **not** a trade secret. It is basically made of the following general components and assembled into a typical data center air-conditioning design:
- a. “Hot aisle” containment.
 - b. Overhead supply air cooling ducts.
 - c. Servers aggregated in back-to-back racks to create a one hot aisle and two cold aisles.
 - d. Hot air plena (or heat shields) to contain and direct the “hot” return air back to the air-handling unit.
 - e. Overhead conduits for power to racks and in turn servers.
 - f. Overhead racked cable/ladder trays for data and communication cables.
- H. In summary:
- a. There are and were no “Trade Secrets” in the Complaint and filed Patents that are and were unknown to professionals in the industry. All designs, components and patents were and are **common-knowledge**.
 - b. Both designs are significantly different. Both the air-conditioning and electrical systems utilize fundamentally different components and architecture. The **only** common elements in both designs are: (1) “hot aisle” containment and (2) power spline, both of which are both commonly used design principles and/or concepts. There are numerous manufacturers that build “containment” systems like Switch’s T-SCIF or Aligned’s Pod. As described above, the power spline is just a name for the area of dedicated space, hallway, gallery or corridor for the housing of major electrical feeders and distribution equipment. The layout of this area between the two designs differ significantly due to the radically dissimilar electrical system architectures. For Code, operational and security reasons, most data center design professionals create separate “dedicated” electrical equipment spaces/areas.



Appendix

A. Julian Rachman PE – Curriculum Vitae



Julian Rachman, PE, LEED AP
Principal

45+ Years Experience

Education

Bachelor of Science with Honors; Electrical Engineering University of Witwatersrand, South Africa, 1975

Professional Registrations

- Registered Professional Engineer South Africa, 1979
- Registered Professional Engineer | Texas (1981) & 14 other states
- National Registration, National Council of Examiners for Engineers and Surveyors (NCEES), 1988
- USGBC, LEED Accredited Professional

Professional Affiliations

- 7x24 Exchange Lone Star Chapter - Founding Member, Board Member, Secretary/Treasurer
- Construction Specifications Institute (CSI)
- Illuminating Engineering Society (IES)
- Institute of Electrical & Electronic Engineers (IEEE)
- Society of Broadcast Engineers (SABE)
- U.S. Green Building Council (USGBC)

Publications

White Papers

- Data Center Heat and Power Issues. Julian Rachman. 2009.
- The Green Data Center. Julian Rachman. 2012.
- Critical Power Systems for Crowbar Protection of IOT's. Julian Rachman. 2007.

Case Studies

- Data Center Energy Cost Reduction Measures. Julian Rachman and WL McCulloch. 2010.

Work Experience

1989—Present: Principal/Co-Founder, **DFW Consulting Group, Inc.**

Design and participation in over 650 projects ranging in the mission critical sector serving broadcast, data center, government, and telecommunications client's. Additionally, he has designed and managed numerous clients' switchgear maintenance, replacements, and upgrades for 480 Volt, 4,160 Volt, and 13,200 Volt systems. Currently, Mr. Rachman is overseeing a clients' national program for arc flash, short circuit, and protective device coordination of electrical distribution systems.

2002—Present: Principal/Co-Founder, **Command Commissioning, LLC**

Electrical systems commissioning at the component and integrated systems level of complex electrical systems for mission critical facilities.

1988—1989: Chief Electrical Engineer, **Steve Dunn & Partners**

Designed a 38-story high-rise building in Tampa, FL, and the Medical Center for East Birmingham, AL.

1984—1988: Principal/Founder, **MEP Systems Design & Engineering**

Performed numerous electrical plant audits for Frito-Lay. These audits included evaluating the electrical switchgear, distribution system, and controls for large snack food plants throughout the United States.

1979—1984: Project Electrical Engineer, **Blum Consulting Engineers**

Designed the electrical distribution system for high-rise buildings, airport terminals, and data centers.

1978—1979: Electrical Engineer, **Vector Engineering**

Power systems studies for the Corps of Engineers at several military bases.

1977—1978: Electrical Engineer, **John C. Morris Associates**

Designed the electrical power distribution and controls systems for sewage and water treatment facilities

1972—1977: Intern/Graduate Electrical Engineer, **Hill Kaplan Scott**

On-site construction coordinator for the new South African Air Force Headquarters.

Julian Rachman, PE, LEED AP Principal

Representative Project Experience

- 1215 Integrity Drive Data Center
- Agility Logistics Data Center
- Archon Data Center
- Baylor Marrs McLean Science Building Expansion
- BBWCDF Data Center Upgrade
- BECO Data Centers, Battlefield & Terminal Dr
- bTV Broadcast Station, Bulgaria
- CBS 7 Broadcast Facility; Odessa, TX
- CenturyLink Data Center
- Charlton Methodist Hospital
- Chickasaw Nation Industries Data Center
- Club Corp Data Center Upgrade
- Data Centers Now, Virginia
- DeSoto High School Stadium
- Frito-Lay Data Center
- Hall Office Park Various Buildings
- Highland Park ISD Data Center
- HSBC Bank Data Center Buffalo
- Hurst Justice Center
- Intuit Data Center
- Involta Data Center; Tuscon, AZ
- KETV-7 at Burlington Train Station; Omaha, NE
- McAfee Plano Data Center
- McAfee Santa Clara Data Center
- Midlothian High School Stadium
- NASCAR TV Facility; Charlotte, NC
- Non-disclosed Global Telecom. Co. Central Plant Upgrade
- Non-disclosed Global Telecom. Co. Messaging Data Center
- Non-disclosed Global Telecom. Co. Allen Mobility Data Center
- Pepsi Business Solutions Group Data Center
- Piedmont College Student Commons
- Prestonwood Christian Academy
- TCU Schieffer School of Journalism
- UTSW Veripath Labs
- VA Data Center; Austin TX
- WBAL Broadcast Facility; Baltimore, MD
- WCVB TV Infrastructure Upgrade
- WFSB Broadcast Facility; Hartford, CT
- WFTX Broadcast Facility Renovation; Ft. Meyer, FL
- WJLA TV Broadcast Facility; Arlington, VA
- WPXI Broadcast Facility; Pittsburgh, PA

Select Assessment/Study Project Experience

- CitiGroup Solana Data Center Analysis
- Mobil1 Consulting
- Non-disclosed Federal Financial Institution Arc Flash Analysis
- Non-disclosed Global Telecom. Co. National Arc Flash and Power Systems Coordination Study
- Perot Systems Data Center Assessment

Expert Witness Experience

- 2018 - Dexter vs. Wells Fargo
Evaluation of an obsolete co-generation generator power plant
- 2013—Triumph Aerostructures, Grand Prairie
Maintenance evaluation of obsolete electrical switchgear and equipment
- 2002—Stone Crushing Plant, North Texas
Testimony and analysis of tone crushing motor failures.